

## Claims

1. An audio output apparatus having:

at least one first speaker changeably installed in a predetermined position and outputting an audio signal; and

a plurality of second speakers fixedly installed in positions different from the position of the first speaker and different from each other, and outputting audio signals,

the apparatus generating a sound field according to position relations among the install position of the first speaker and the install positions of the plurality of second speakers when the position of the user is used as a reference,

wherein the apparatus comprises:

a plurality of audio signal detecting means provided in or near the install positions of the second speakers and detecting audio signals output from the first speaker;

speaker position calculating means for obtaining the audio signals detected by the audio signal detecting means, detecting that the install position of the first speaker has been changed on the basis of the obtained audio signals, and calculating the changed install position; and

audio signal output adjusting means, on the basis of the changed install position of the first speaker and the install positions of the plurality of second speakers, that adjusts output of the audio signal from at least one of the first speaker whose install position has been changed and the plurality of

second speakers so that a sound field according to the position relations before the install position of the first speaker was changed is maintained.

2. The audio output apparatus according to claim 1,  
wherein the audio signal output adjusting means adjusts at least one of an output volume level of the audio signal and an output timing of the audio signal.

3. The audio output apparatus according to claim 1 or 2,  
wherein the audio signal output adjusting means changes allocation of output of the audio signals to the plurality of second speakers.

4. The audio output apparatus according to any one of claims 1 to 3,

wherein the speaker position calculating means calculates distances between the install position of the first speaker and the install positions of at least three second speakers, and calculates the install position of the first speaker by using the calculated distances and the install positions of the speakers corresponding to the calculated distances.

5. An audio signal output adjusting apparatus having:  
at least one first speaker changeably installed in a predetermined position and outputting an audio signal;

a plurality of second speakers fixedly installed in positions different from the position of the first speaker and different from each other, and outputting audio signals;

a plurality of audio signal detecting means provided in or near the install positions of the second speakers and detecting audio signals output from the first speaker; and

speaker position calculating means for obtaining the audio signals detected by the audio signal detecting means, detecting that the install position of the first speaker has been changed on the basis of the obtained audio signals, and calculating the changed install position,

wherein on the basis of the changed install position of the first speaker and the install positions of the plurality of second speakers, output of the audio signal from at least one of the first speaker whose install position has been changed and the plurality of second speakers is adjusted so that a sound field according to the position relations among the install position of the first speaker before the change and the install positions of the plurality of second speakers when the position of the user is used as a reference is maintained.

6. An audio signal output adjusting method performed by an audio output apparatus having:

at least one first speaker changeably installed in a predetermined position and outputting an audio signal;

a plurality of second speakers fixedly installed in

positions different from the position of the first speaker and different from each other, and outputting audio signals; and

a plurality of audio signal detecting means provided in or near the install positions of the second speakers and detecting the audio signals output from the first speaker,

the method comprising:

a step of obtaining the audio signals detected by the audio signal detecting means, detecting that the install position of the first speaker has been changed on the basis of the obtained audio signals, and calculating the changed install position; and

a step of, on the basis of the changed install position of the first speaker and the install positions of the plurality of second speakers, adjusting output of the audio signal from at least one of the first speaker whose install position has been changed and the plurality of second speakers so that a sound field according to the position relations among the install position of the first speaker before the change and the install positions of the plurality of second speakers when the position of the user is used as a reference is maintained.

7. An audio signal output adjusting process program for a computer included in an audio output apparatus having:

at least one first speaker changeably installed in a predetermined position and outputting an audio signal;

a plurality of second speakers fixedly installed in

positions different from the position of the first speaker and different from each other, and outputting audio signals;

a plurality of audio signal detecting means provided in or near the install positions of the second speakers and detecting audio signals output from the first speaker; and

speaker position calculating means for obtaining the audio signals detected by the audio signal detecting means, detecting that the install position of the first speaker has been changed on the basis of the obtained audio signals, and calculating the changed install position,

wherein the program makes the computer function to adjust, on the basis of the changed install position of the first speaker and the install positions of the plurality of second speakers, output of the audio signal from at least one of the first speaker whose install position has been changed and the plurality of second speakers so that a sound field according to the position relations among the install position of the first speaker before the change and the install positions of the plurality of second speakers when the position of the user is used as a reference is maintained.

8. A recording medium on which the audio signal output adjusting process program according to claim 7 is computer-readably recorded.